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(71) Applicant(s)

Roozbeh Shirandami
Flat 5, 28 Cintra Park, Upper Norwood,
LONDON, SE19 2LH, United Kingdom

Michael John Bevis
26 Water Tower Close, UXBRIDGE,
Middlesex, UB8 1XS, United Kingdom

(72) Inventor(s)

Roozbeh Shirandami
Michael John Bevis

(74) Agent and/or Address for Service

Roozbeh Shirandami
Flat 5, 28 Cintra Park, Upper Norwood,
LONDON, SE19 2LH, United Kingdom

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GB 2356342 A	GB 1540374 A
EP 0233782 A	US 6349432 A
US 5966754 A	US 5065464 A
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Other: Online: **EPODOC, WPI, JAPIO**

(54) Abstract Title

Foldable transfer board; Hinges

(57) A folding transfer or slide board 1 for disabled persons has two or more hingedly connected sections 2,3 which can be folded against each other. The hinges may form a rigid joint under the action of the load on the board and can be locked, possibly at a selected angle, when open. Each section may comprise a pair of rigid edge beams (21 Fig 14) connected by a rigid or flexible panel or membrane (22). A flexible membrane allows the board to be folded lengthwise and may be held in tension by struts (23) when unfolded. Each hinge-pin 7 has a flange 17 with a serrated surface 16 engaging corresponding serrations (Figs 12,13) on one side of a hinge knuckle 10. The pin may be shifted laterally against a spring 19 to release the engagement.

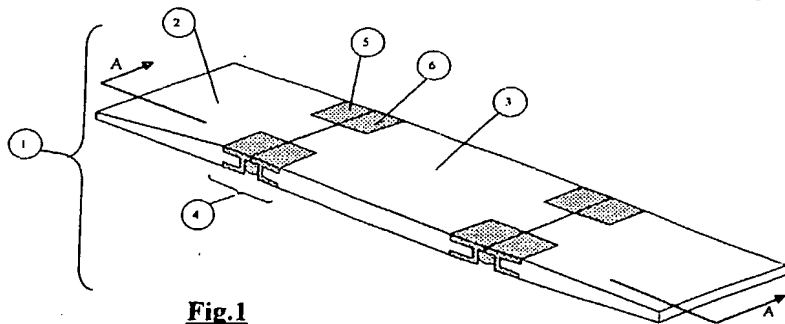


Fig.1

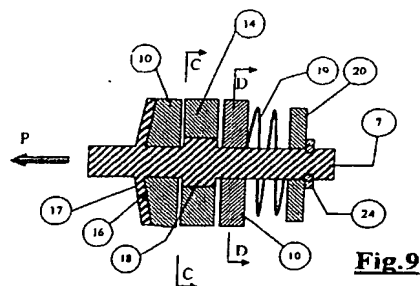


Fig.9

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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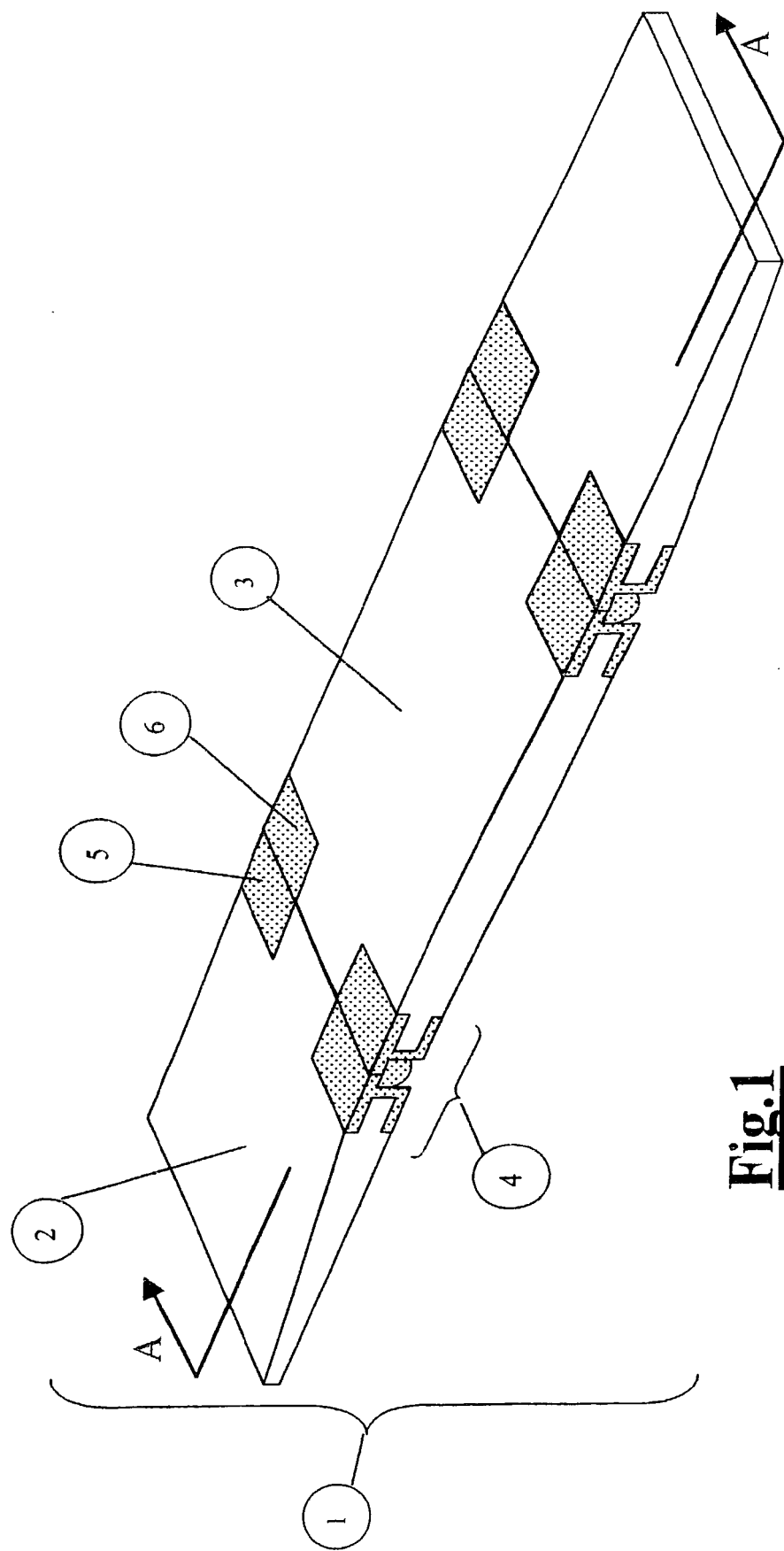
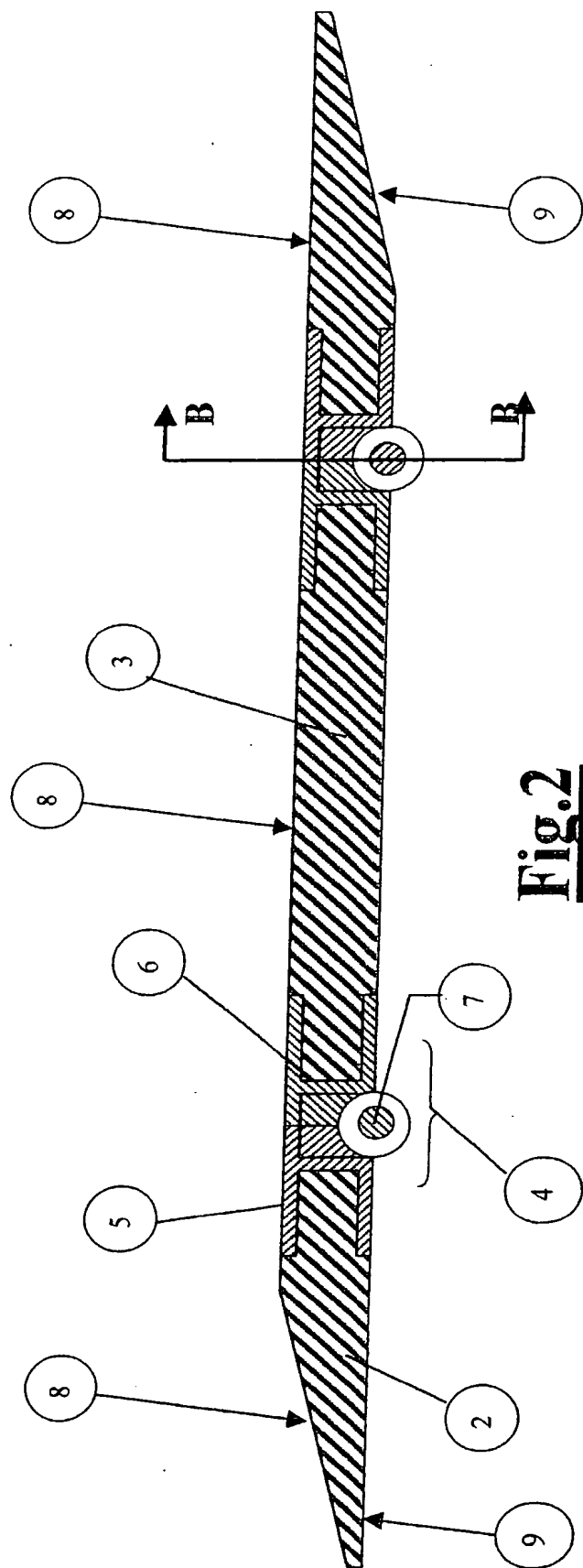
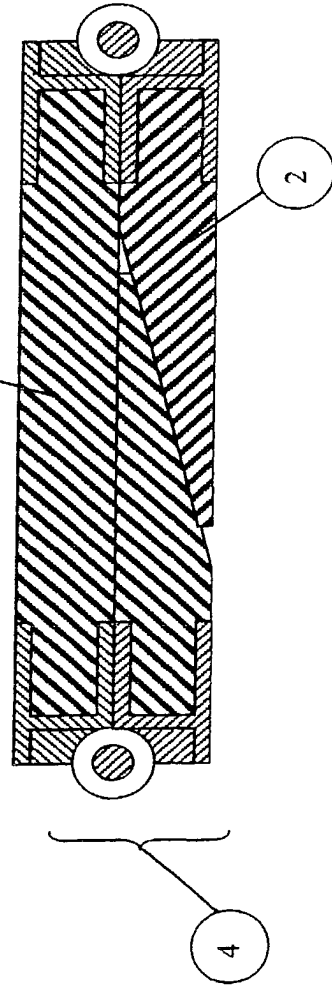
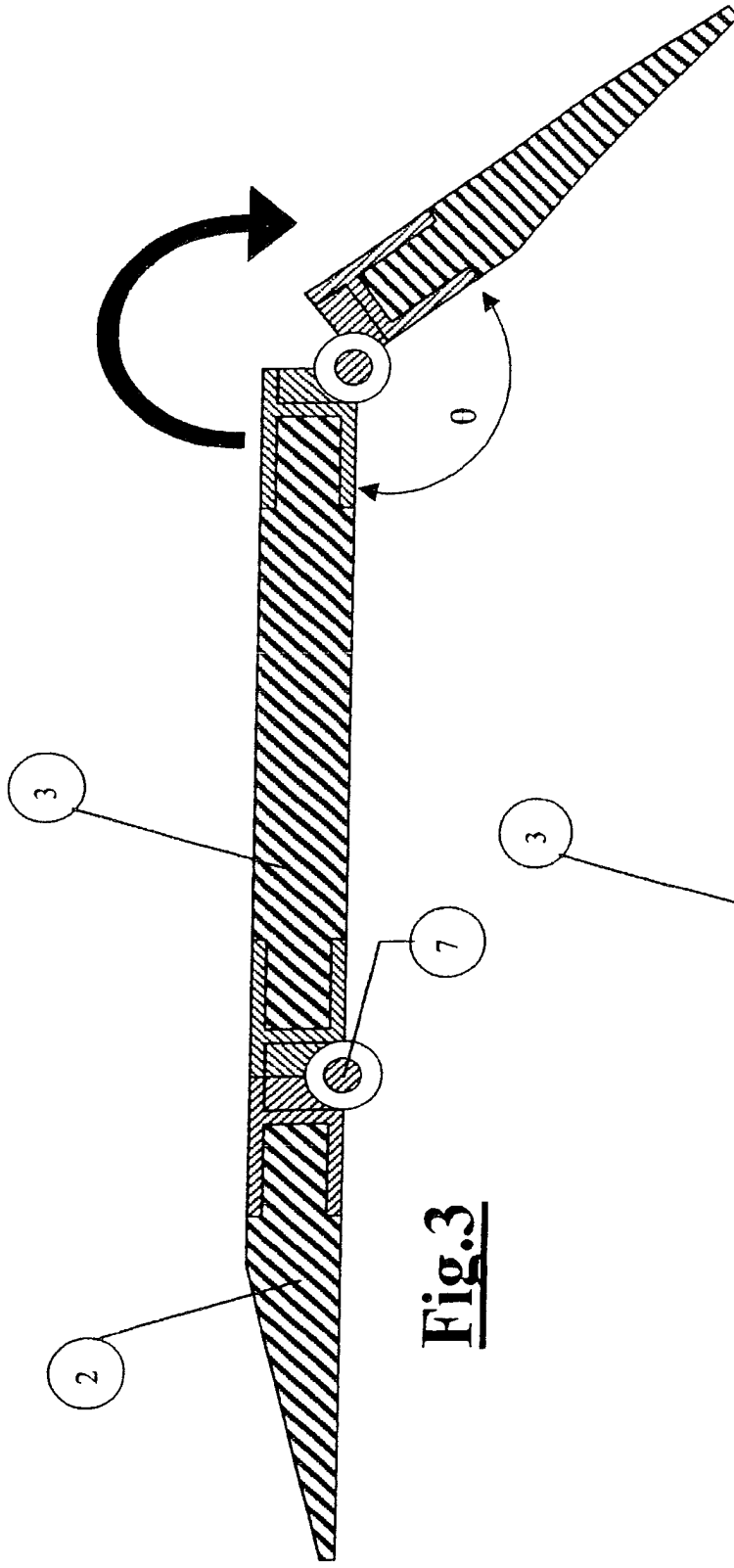


Fig. 1





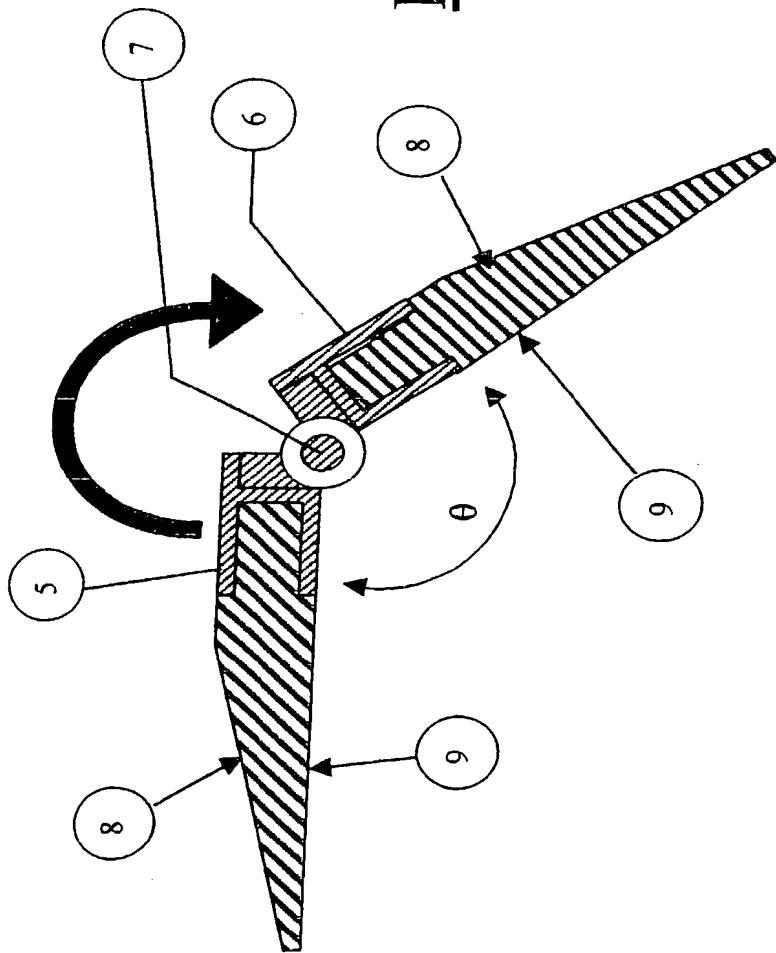


Fig. 5

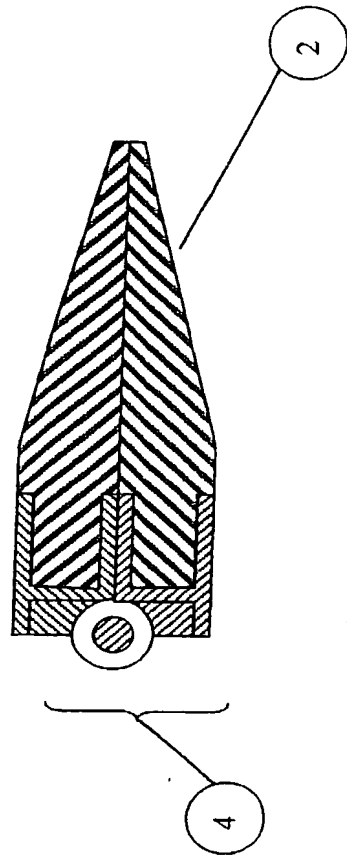
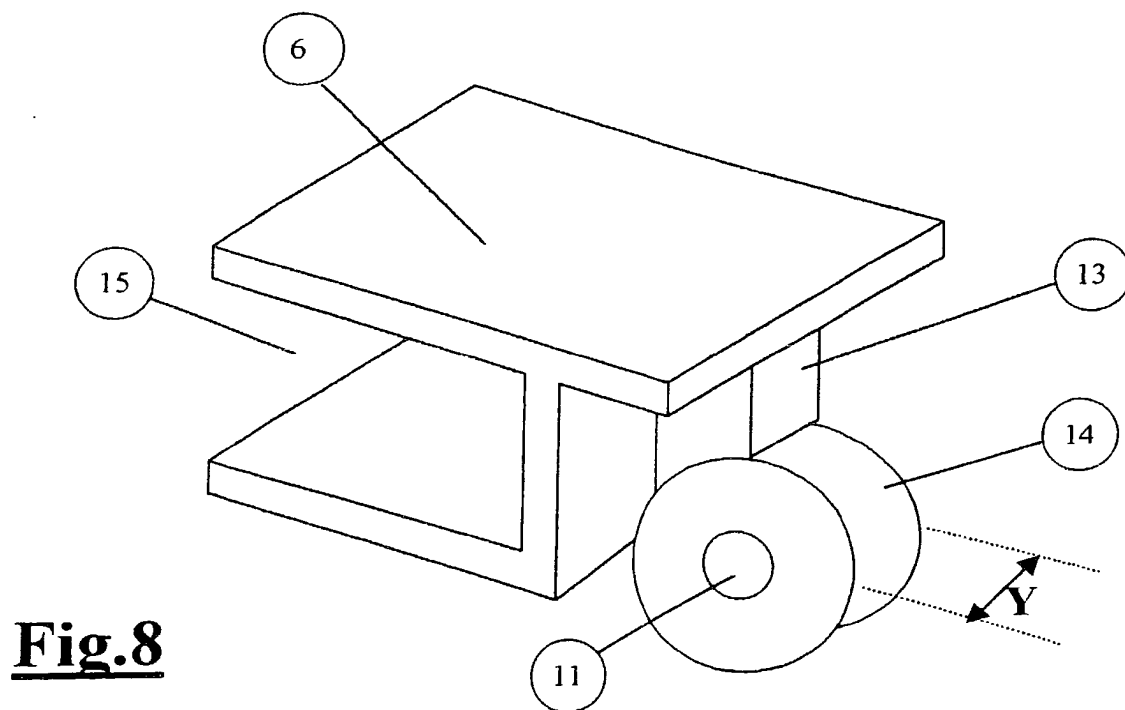
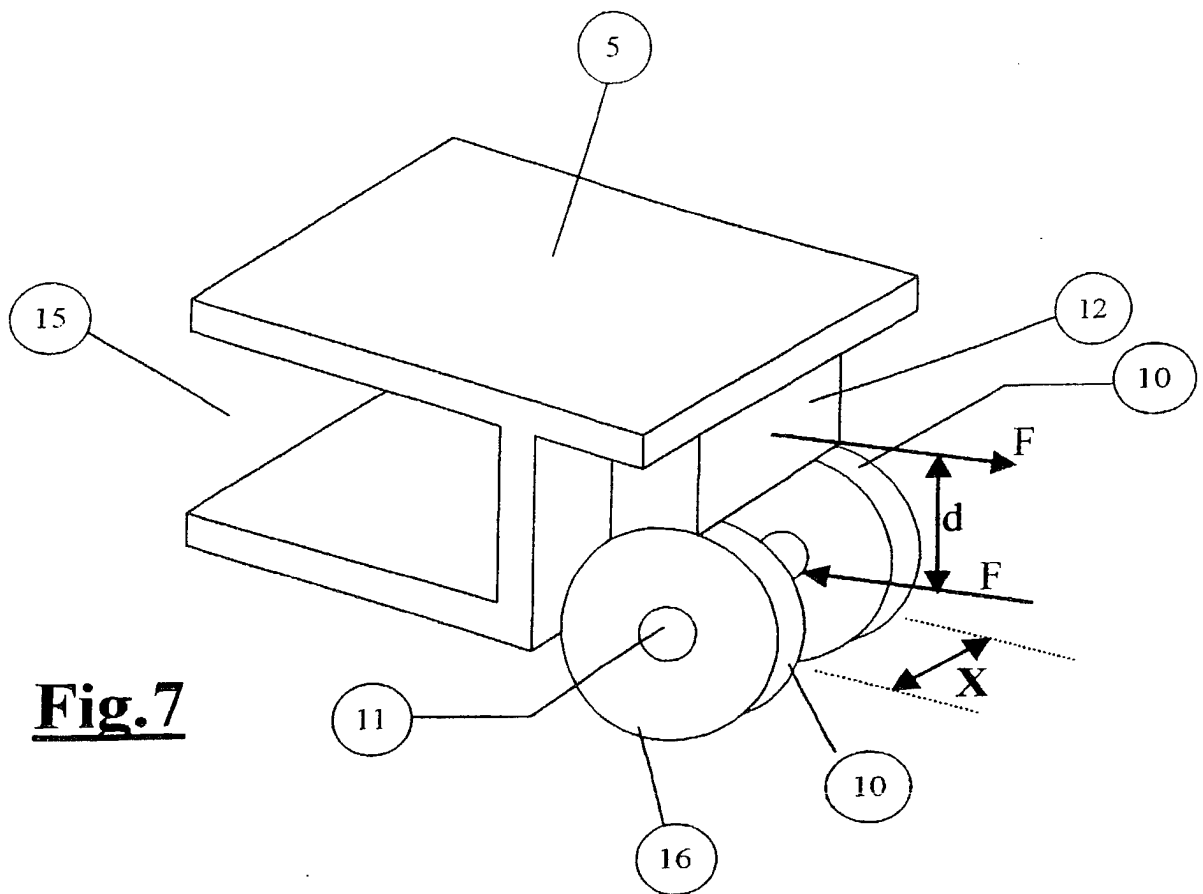
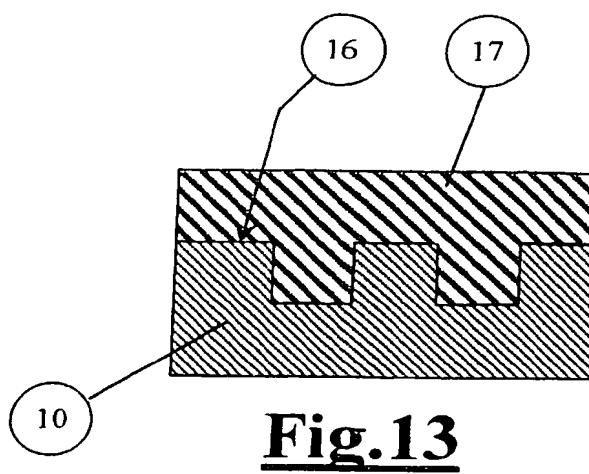
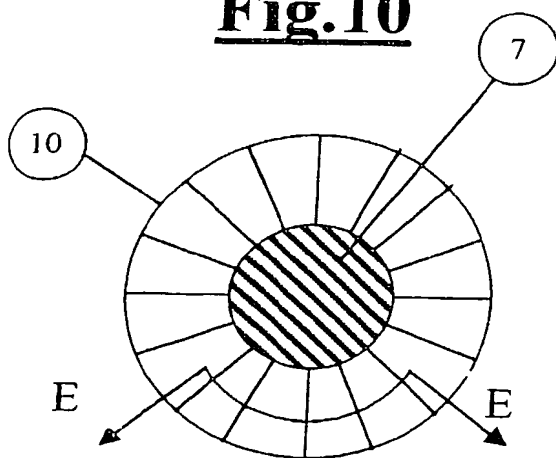
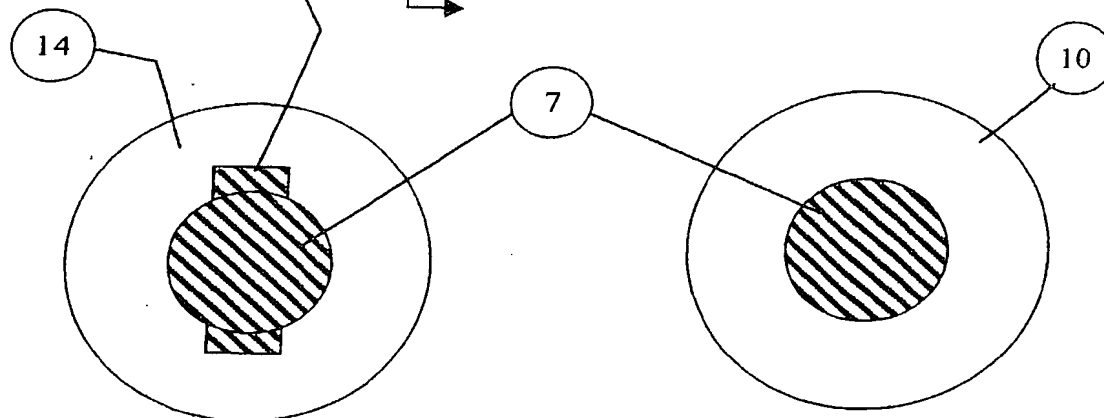
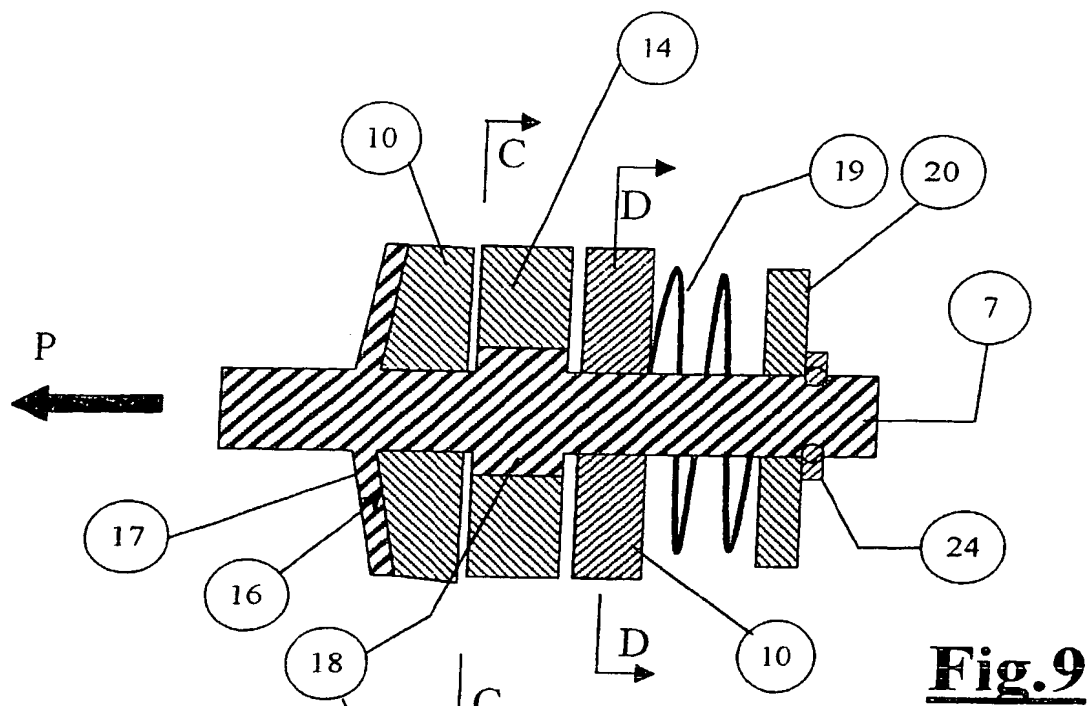


Fig. 6





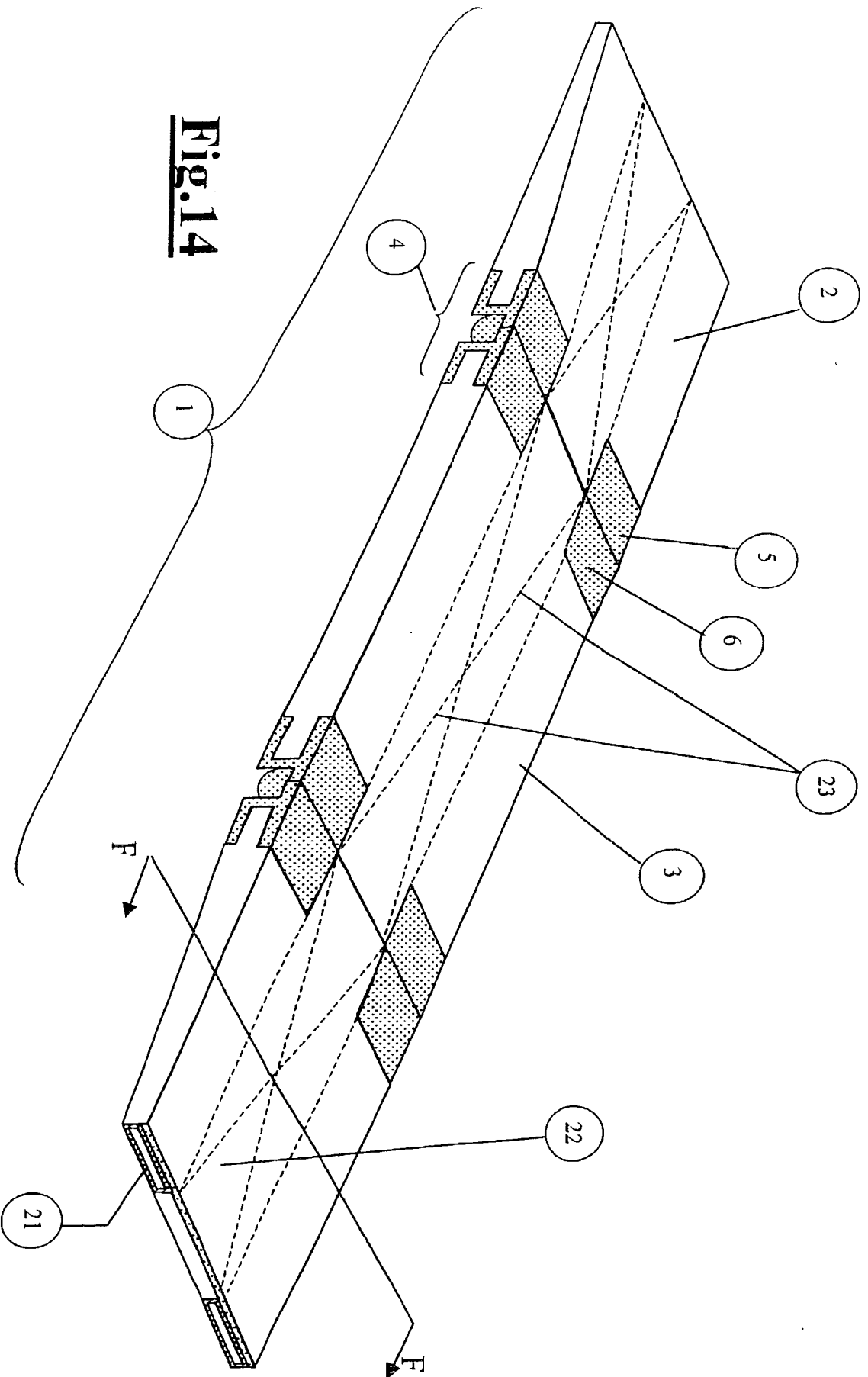


Fig.14

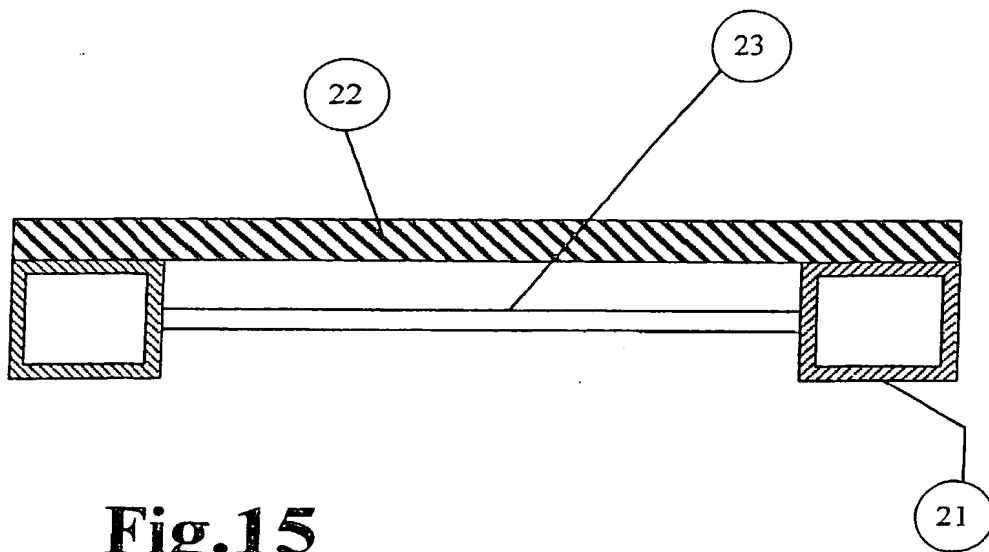


Fig.15

Disabled transfer board

This invention relates to a disabled transfer board. A transfer board (or more commonly known as a "slide board") is used as an aid for transferring the disabled person from one item of furniture /support device to another, either by themselves or by assistance.

The transfer boards currently available are basically a rigid board of fixed length and width, typically 600-700mm long and 200mm wide. UK patent GB2236946 discloses a similar board with additional feature of edge handles to help in transportation. The board basically forms a bridge between the two items of furniture/support device and allows the disabled person/user to slide from one item of furniture/support device to another. To facilitate sliding of the disabled person one face (i.e. the sliding face) is highly polished while the ends of the opposing face in contact with either furniture/support surfaces may be treated by non-slip paint to prevent the board from slipping against the said furniture/support device.

Such boards although are very useful in aiding the disabled have a major disadvantage of not being easily portable because of their size. The present invention overcomes this drawback by allowing the board to be folded so as to reduce its size when not in use and therefore easier to transport.

According to the present invention there is provided a transfer board comprising of at least a pair of elongated elements interconnected by means of at least one hinge, so as to allow the elongated members to fold on each other when not in use.

In a preferred embodiment, the elongated members are comprised of shaped rigid plates having a smooth surface on one side to reduce the resistance to sliding.

In a preferred embodiment the said hinge connecting the said elongated member forms a rigid joint between the said elongated members under the action of load applied to the sliding surface when the said members are opened for use.

In a preferred embodiment the said hinge includes a safety lock that prevents folding of the said elongated elements when the said transfer board is unfolded for use.

In yet another embodiment the said hinge can be locked at differing angles, so as to control the angle between the said elongated elements.

In yet another embodiment, each elongated member is formed from a pair of edge beam elements with a membrane element spanning there between the said edge beam elements.

In a preferred embodiment the, said membrane element may be formed from a rigid plate.

In yet another embodiment the said membrane element may be formed from a flexible material so as to allow the assembly of pair of edge beams and said membrane forming the elongated members to be folded parallel to the edge beams.

In a preferred embodiment the said flexible element is kept under tensile stress between the said elongated edge members by means of lockable bracing members that push the said elongated edge members laterally outward.

Embodiments of this invention will now be described by way of example with reference to the accompanying drawings in which:

Fig.1 Is an Isometric view of a slide board when fully opened.

Fig.2 Is the sectional elevation along the line A-A as shown in Fig.1.

- Fig.3 Is the sectional elevation along the line A-A as shown in Fig.1 with one edge member partially folded.
- Fig.4 Is the sectional elevation along the line A-A as shown in Fig.1 with the slide board fully folded.
- Fig.5 Is the sectional elevation along line A-A as shown in Fig.1 formed only by a pair of end elements (2) partially folded.
- Fig.6 Is the sectional elevation of the board as shown in Fig.6 with the slide board folded.
- Fig.7 Is the isometric view of the female hinge
- Fig.8 Is the isometric view of the male hinge.
- Fig.9 Is the sectional elevation B-B of the hinge assembly and locking device as shown in Fig.2.
- Fig.10 Is the sectional elevation C-C as shown in Fig.9.
- Fig.11 Is the sectional elevation D-D as shown in Fig.9.
- Fig.12 Is the plan elevation along the surface 16 as shown in Fig.9.
- Fig.13 Is part circumferential section elevation along E-E as show in Fig.2.
- Fig.14 Is an isometric view of a slide board as shown in Fig.2 with the plate member replaced by a flexible membrane.
- Fig.15 Is the sectional elevation along F-F as shown in Fig.14.

While the invention is susceptible to various modifications and alternative forms, specific embodiment thereof has been shown by way of examples. It should be understood that the examples and drawings are not intended to limit the invention to the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the pending claims.

Turning to figure 1 and 2, the slide board (1) constructed in accordance with the present invention, is comprised of elongated members (2&3) interconnected by means of hinge assembly (4) each formed by a female (5), a male hinge (6) and a connecting a rod (7). Surfaces (8) of the slide board (1) forms the sliding surface of the said slide board (1) and is highly polished so as to reduce the resistance to sliding. Surfaces (9) of the said slide board

(1) in a preferred embodiment are treated with anti slip paint so as to prevent it from slipping against the furniture surface.

Turning to Figure 3 and 4, the elongated members (2) can rotate about the said connecting rod (7) of the hinge assembly (4). The length of the elongated member (3) is such that allows the wedge shaped elongated members (2) to fold on one another.

Turning to Figure 5 and 6, the said slide board (1) can be made up of only wedge shaped elongated members (2) with the middle elongated member (3) removed. Similarly surface (8) is highly polished to assist in sliding while surface (9) is treated with anti slip paint to prevent it slipping against the furniture surface.

Figures 7 and 8 represent the female (5) and male (6) hinges of the hinge assembly (4) while figure 9 represent the sectional elevation of the joint assembly along the line B-B as shown in Fig.2. As can be seen both hinges are made of a channel section having an opening (15) for accepting the elongated members (2&3). The female hinge has a pair of projecting webs members (10) spaced apart by a distance (X), while the male hinge (6) has a single projecting web member (14) whose width (Y) is less than the said opening (X) of the female hinge (5) so as allow web member (14) to position between the web members (10). Both projecting webs (10&14) are provided with an opening (11), which houses the connecting rod (7) (figures 2-4) connecting the said two parts (5&6) such that the bearing surfaces (12&13) of the respective hinge is in contact with one another when the said slide board (1) is opened for use (figures 1&2). Therefore the bending moment at the joint caused by the user's weight bearing on the sliding surface (8) of the said board (1) is resisted by couple force F at a distant d, acting at the connecting rod (7) and centroid of the bearing surfaces (13&12).

Turning to Figures 10 to 13, in a preferred embodiment the hinge assembly (4) may be provided by a locking mechanism by means of a connecting rod (7) having projecting flanges (18) which engage on to said connecting

member (14) of the male hinge (6) while being of circular shape across the connecting members (10) of the female hinge (5), Fig.11. The connecting rod is provided with a circular flange (17) having a contact surface (16) on the said connecting member (10) in which both parts (17&10) have radially matched serrated surfaces (as shown in Figs. 12&13). The two surfaces are pressed onto one another by means of the spring (19) bearing against the washer (20) and locking circular clip (24), can only be disengaged by pulling the connecting the connection rod in the direction P. As a result any rotation of the male hinge (6) and therefore connecting flange (14), results in the rotation of the connecting rod (7), which is resisted by the engaging serrated surface (16) of flange (17) and connection flange (10). Therefore the moment at the hinge is resisted by means of torsion in the connecting rod. Furthermore it is possible to fix the angle θ (see fig.3) between the elongated members as desired. This also forms a safety lock at the hinge assembly, by locking the elongated elements (2&3) relative to one another once the slide board is opened (Fig.1).

Turning to Figs.14 and 15, the proposed slide board (1) can be comprised of a pair of elongated stiff edge members (21) with a rigid plate member (22) spanning there between the said edge members and the hinge assembly (4) attached to the edge members. Alternatively the said plate member (22) may be made of fabric membrane (i.e. flexible fabric) under tension. The membrane is pulled tight under the tensile force provided by the bracing members (23) pushing the edge members apart. Therefore the said board (1) can also be folded along its longitudinal axis.

I claim:

1. A transfer board comprising of at least a pair of elongated elements interconnected by means of at least one hinge allowing the elongated members to fold on each other when not in use.
2. A transfer board as claimed in claim 1 wherein the said hinge connecting the said elongated member forms a rigid joint between the said elongated members under the action of load applied to the sliding surface of the slide board when the said members are unfolded for use.
3. A transfer board as claimed in claims 1 and 2 wherein the said hinge includes a safety lock that prevents folding of the said elongated elements when the said transfer board is unfolded for use.
4. A transfer board as of claim 3 wherein the said hinge can be locked at differing angles, so as to control the angle between the said elongated elements.
5. A transfer board as claimed in any of the above claims above wherein the elongated members are comprised of shaped rigid plates having a smooth surface on one side to reduce the resistance to sliding.
6. A transfer board as claimed in any of the above claims wherein each elongated member is formed from a pair of edge beam elements with a membrane element spanning there between the said edge beam elements.
7. A transfer board as claimed in claim 6 wherein the said membrane element may be formed from a rigid plate.
8. A transfer board as claimed in claim 6 wherein the said membrane element may be formed from a flexible material

9. A transfer board as claimed in claims 6 and 8 wherein the assembly of pair of edge beam elements and said membrane forming the elongated members are folded parallel to the edge beams when not in use.
10. A transfer board as of claim 6 wherein the said flexible element is kept under tension between the said elongated edge members by means of lockable bracing members that push the said elongated edge members laterally outward.
11. A transfer board substantially as hereinbefore described with reference to the accompanying drawings.

Amendments to the claims have been filed as follows

I claim:

1. A transfer board comprising of at least a pair of elongated elements interconnected by means of at least one hinge allowing the elongated members to fold on each other when not in use, wherein the said hinge connecting the said elongated member forms a rigid joint between the said elongated members under the action of load applied to the sliding surface of the transfer board when the said members are unfolded for use.
2. A transfer board as claimed in claims 1 wherein the said hinge includes a safety lock that prevents folding of the said elongated elements when the said transfer board is unfolded for use.
3. A transfer board as of claim 1 and 2 wherein the said hinge can be locked at differing angles, so as to control the angle between the said elongated elements.
4. A transfer board as claimed in any of the above claims above wherein the elongated members are comprised of shaped rigid plates having a smooth surface on one side to reduce the resistance to sliding.
5. A transfer board as claimed in any of the above claims wherein each elongated member is formed from a pair of edge beam elements with a membrane element spanning there between the said edge beam elements.
6. A transfer board as claimed in claim 5 wherein the said membrane element may be formed from a rigid plate.
7. A transfer board as claimed in claim 5 wherein the said membrane element may be formed from a flexible material

8. A transfer board as claimed in claims 5 and 7 wherein the assembly of pair of edge beam elements and said membrane forming the elongated members are folded parallel to the edge beams when not in use.
9. A transfer board as of claim 7 wherein the said membrane element is kept under tension between the said elongated edge members by means of lockable bracing members that push the said elongated edge members laterally outward.
10. A transfer board substantially as hereinbefore described with reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0208209.7
Claims searched: ALL

Examiner: R E Hardy
Date of search: 27 September 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): A4L (LAS); B8H (HDX)

Int Cl (Ed.7): A61G (7/10)

Other: Online: EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage			Relevant to claims
A	GB2356342	A	SABINE : Whole document	1
A	GB1540374	A	NRDC : See the Figs, separable parts 11,2	1
X	EP0233782	A	JOHANSSON : See Figs 1,2,5-7 & col 2 lines 36-51	1,5
X	US6349432	A	SCORDATO : See Fig 3 especially & col 5 lines 44-52, col 10 lines 23-26	1,5
X	US5966754	A	SCHUSTER : See Figs 1a,b & col 2 lines 43-36, col 3 lines 44-50	1
X	US5065464	A	BLANCHARD : See Figs 1,10 & col 19 lines 3-30	1
X	US4744115	A	MARCHIONE : See Figs and col 2 line 67	1

X Document indicating lack of novelty or inventive step
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